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COLEOPTERA OF THE NORTH SHORE OF THE GULF OF THE ST. LAWRENCE.*

BY W. J. BROWN,
Ottawa, Ont.

(Continued from page 237)

HYDROPHILIDAE

Ochthebius holmbergi Mann. 9, Quarry Island, Mingan, June 13.

Helophorus lacustris Lec. 3, Natashquan, June 21 and Aug. 11.

Hydrobius fuscipes L. 4, Natashquan, June 22; 1, Harrington Harbor, June 30; 2, Greenly Island, July 20.

Anacaena limbata Fab. 7, Quarry Island, Mingan, June 13; 4, Betchewun, June 14; 1, Watshishu, June 18; 1, Natashquan, June 21.

Enochrus hamiltoni Horn. 1, Mascanin, June 20; 6, Natashquan, Aug. 5, 11.

Cercyon littoralis Gyll. 1, Betchewun, June 14; 22, St. Genevieve Island, June 17; 1, Natashquan, Aug. 10; 4, Bradore Bay, Aug. 22.

Cercyon unipunctatus L. 1, Trinity Bay, Aug. 20.

Cercyon marinus Thoms. 5, Natashquan, Aug. 3, 5.

Cercyon lateralis Marsh. (?). 1, Esquimaux Point, June 13.

Cercyon pygmaeus Illig. 14, Esquimaux Point, June 13.

Cercyon sp., near *analis* Payk. 1, Trinity Bay, Aug. 20.

Cryptopleurum minutum Fab. 1, Thunder River, June 11; 6, Esquimaux Point, June 13.

SILPHIDAE

Silpha lapponica Hbst. 6, Thunder River, June 10; 1, Bradore Bay, July 26.

Choleva sp. 1, Bradore Bay, July 27.

Choleva sp. 1, Bradore Bay, July 27.

Choleva sp. 3, Bradore Bay, July 17.

Choleva sp. 1, Natashquan, Aug. 13; 1, Tabatiere, July 11.

Choleva sp. 1, Thunder River, June 11.

Colon magnicolle Mann. 1, Bradore Bay, July 22.

Hydnobius substriatus Lec. 1, Natashquan, Aug. 1.

Anisotoma punctatostriata Kby. 1, Esquimaux Point, June 13.

Anisotoma sp. 1 ♀, Natashquan, Aug. 1.

Anisotoma sp. 1 ♂, Bradore Bay, July 22.

STAPHYLINIDAE

Anthobium pothos Mann. 1, Natashquan, Aug. 9.

Omalium foraminosum Makl. 1, Bradore Bay, July 25.

Omalium sp. 1, Seven Islands, June 8.

Acidota crenata Fab. 1, Natashquan, Aug. 10; 1, Bradore Bay, July 24.

Oxytelus invenustus Csy. 1, Thunder River, June 11; 1, Esquimaux Point, June 13; 9, Natashquan, Aug. 1-10.

Oxytelus sp. 2 ♀, Natashquan, June 22.

Platystethus americanus Er. 1, Esquimaux Point, June 13; 4, Natashquan, Aug. 9, 10.

Stenus juno Fab. 1, Natashquan, Aug. 13..

Stenus sp. 2, Natashquan, Aug.. .10. 11.

Stenus sp. 1, Natashquan, Aug. 10.

Euaesthetus americanus Er.. 1, Thunder River, June 11.

Gyrohypnus obsidianus Mels. 1, Trinity Bay, Aug. 20.

Actobius sp. 1, Bonne Esperance, July 14.

Philonthus furvus Nord. 3, Thunder River, June 10; 1, Net Island, July 12.

Philonthus sp. 1, Seven Islands, June 8; 7, Esquimaux Point, June 13.

Creophilus maxillosus L. 3, Seven Islands, June 8; 1, Thunder River, June 10; 1, Bonne Esperance, July 14; 18, Bradore Bay, July 19-22; very abundant.

Quedius agnatus Csy. 4, Bradore Bay, July 22.

Tachinus memnonius Grav. 1, Trinity Bay, Aug. 20.

Tachinus parallelus Horn. 1, Harrington Harbor, July 4; 2, Bradore Bay, July 27.

Tachinus sp. 11, Bradore Bay, July 19-24.

Tachinus sp. 6, Esquimaux Point, June 13; 4, Natashquan, Aug. 1, 10.

Tachyporus chrysomelinus L. 8, Thunder River, June 11; 1, Natashquan, Aug. 1; 1, Mecatina Sanctuary, July 9.

Aleocharinae. 6, including several species, from various localities.

PTILIIDAE

Acratrichis sp. 6, Trinity Bay, Aug. 22.

SCAPHIDIIDAE

Scaphium castanipes Kby. 1, Natashquan, Aug. 10.

HISTERIDAE

Saprinus fraternus Say. 1, Natashquan, Aug. 8.

LYCIDAE

Eros aurora Hbst. 1, Mascanin, June 20.

LAMPYRIDAE

Lucidota corrusca L. 1, Severn Islands, June 8.

Lucidota sp. 1 ♀, St. Genevieve Island, June 17.

CANTHARIDAE

Podabrus laevicollis Kby. 2, Natashquan, Aug. 1; 4, Mutton Bay, July 11; 1, Tabatiere, July 11; 9, Bradore Bay, Aug. 19-26.

Podabrus sp. 1 ♀, Natashquan, Aug. 1.

Cantharis nigritulus Lec. 4, Mutton Bay, July 11; 5, Bonne Esperance, July 14; 26, Bradore Bay, July 19-27.

Malthodes fragilis Lec. 1, Natashquan, Aug. 9.

MORDELLIDAE

Anaspis rufa Say. 1, Trinity Bay, Aug. 18.

PYTHIDAE

Salpingus virescens Lec. 1, Trinity Bay, Aug. 22.

ELATERIDAE

Limonius aeger Lec. 1, Fog Island Sanctuary, June 25; 4, Jones Harbor, June 27; 3, Harrington Harbor, July 2; 2, Mutton Bay, July 11.

Ludius spinosus Lec. 2, Harrington Harbor, June 30.

Ludius insidiosus Lec. 1, Quarry Island, Mingan, June 13; 1, St. Genevieve Island, June 17.

Ludius triundulatus Rand. 1, Trinity Bay, Aug. 17; 10, Thunder River, June 11; 1, Mutton Bay, July 11.

Ludius nigricornis Panz. 1, Natashquan, June 22.

Ludius sp. 1, Greenly Island, July 20.

Ludius sp. 1, St. Genevieve Island, June 17.

Eanus decoratus Mann. 1, Harrington Harbor, July 3; 6, Mutton Bay, July 11; 2, Old Fort, July 13; 3, Bonne Esperance, July 14; 2, Bradore Bay, July 19; 2, Greenly Island, July 20.

Eanus maculipennis Lec. 1, Thunder River, June 10; 1, Fog Island Sanctuary, June 25; 4, Jones Harbor, June 27; 11, Lake Island, June 28; 12, Harrington Harbor, July 2, 3; 1, Little Mecatina Island, July 6; 3, Mutton Bay, July 11; 8, Tabatiere, July 11; 5, Bradore Bay, July 21.

Eanus subarcticus Brown. 2, Harrington, July 2; 1, Mutton Bay, July 11; 1, Bradore Bay, July 17. This species is described on page 163 of this volume in connection with a revision of *Eanus*.

Cryptohypnus nocturnus lucidulus Mann. 7, Natashquan, June 21 and Aug. 7, 13; 30, Bradore Bay, July 17-24.

Sericus incongruus Lec. 1, Thunder River, June 11; 2, Mascanin, June 20; 1, Natashquan, June 21; 1, Bragg Harbor, Musquaro, June 24; 1, Lake Island, June 28; 1, Mutton Bay, July 11.

Elater pullus Germ. 1, Seven Islands, June 8.

Elater pedalis Germ. 1, Seven Islands, June 8; 4, Mascanin, June 19; 1, Mutton Bay, July 11.

Elater nigricans Germ. 1, Mascanin, June 20; 1, Natashquan, Aug. 1.

Elater sp. 1, Seven Islands, June 8.

BUPRESTIDAE

Melanophila acuminata DeG. 1, Bradore Bay, July 22; found dead beneath beach drift.

Chrysobothris trinervia Kby. 1, Trinity Bay, Aug. 22.

Chrysobothris scabripennis Cast. 1, Trinity Bay, Aug. 18.

HELMIDAE

Limnius subarcticus n. sp.

Length 2.3-2.4 mm.; width 1.1 mm. Elongate, suboval, moderately convex, fulvo-pubescent. Piceous with distinct aeneous lustre; each elytron with two yellow spots; the one as long as wide, including humerus and basal margin and extending inwardly to the third interval; the other elongate oval and slightly oblique, extending from apical third to a point near apex.

Antennae brownish-yellow, as long as the width of the head across the eyes. Head closely, very finely punctate, less closely so between the antennae; the vertex microscopically alutaceous and only feebly shining.

Pronotum exactly as long as wide; the side margins when viewed from above strongly converging from base to apex, straight, not arcuate. Pronotal punctures fine, separated by about two times their own diameters, obscured basally by the strong alutaceous sculpture which becomes feeble or obsolete at

middle of apex. Basal striae one-third as long as pronotum; pronotal base with a small punctiform fovea on each side of the ante-scutellar emargination.

Elytral length 1.6-1.7 times the width; the sides feebly arcuate in basal half; striae feebly impressed, closely and coarsely punctured; intervals minutely punctulate and microscopically alutaceous.

Holotype.—♂, Bradore Bay, Que., July 26, 1929, (W. J. Brown); No. 3074 in the Canadian National Collection, Ottawa.

Allotype.—♀, same data as holotype.

Paratypes.—14, same data as holotype; 10, same data, July 22, 1929.

On account of its pronotal characters, this species should be placed near *Helmis tardellus* Fall, a species with elytral maculation of a different type. The punctiform pronotal foveae and alutaceous pronotal disk of *subarcticus* readily separate the latter from *ovalis* and its allies.

DASCILLIDAE

Macropogon piceus Lec. 1, Natashquan, Aug. 9.

HELODIDAE

Cyphon variabilis Thunb. 13, Trinity Bay, Aug. 20; 2, Thunder River, June 11; 2, Quarry Island, Mingan, June 13.

BYRRHIDAE

Byrrhus cyclophorus Kby. 4, Bradore Bay, July 26, 27.
Byrrhus geminatus Lec. 6, Bradore Bay, July 22-27.
Byrrhus sp. 1, Seven Islands, June 8.
Byrrhus sp. 1, Bradore Bay, July 22.
Byrrhus sp. 1, Greenly Island, July 20.

NITIDULIDAE

Omosita colon L. 1, Trinity Bay, Aug. 17; 1, Bradore Bay, July 22.
Epuraea truncatella Mann. 3, Trinity Bay, Aug. 17, 22; 6, Natashquan, June 22; 9, Tabatiere, July 11.
Eupraea labilis Er. 29, Trinity Bay, Aug. 22.

RHIZOPHAGIDAE

Rhizophagus minutus Mann. 1, Natashquan, June 22.

CUCUJIDAE

Pediacus fuscus Er. 9, Trinity Bay, Aug. 17, 22; 1, Natashquan, Aug. 3.

CRYPTOPHAGIDAE

Henoticus serratus Gyll. 8, Trinity Bay, Aug. 22; 1, Thunder River, June 11.
Caenoscelis ferruginea Sahlb. 2, Trinity Bay, Aug. 22.

LATHRIDIIDAE

Enicmus consimilis Mann. (?). 1, Trinity Bay, Aug. 22.
Enicmus minutus L. 5, Trinity Bay, Aug. 22; 1, Natashquan, Aug. 7.
Corticaria dentigera Lec. 7, Trinity Bay, Aug. 22; 2, Thunder River, June 11.
Corticaria ferruginea Marsh. 11, Trinity Bay, Aug. 22; 5, Thunder River, June 11; 2, Natashquan, Aug. 3.
Corticaria sp. 1, Trinity Bay, Aug. 22.

COCCINELLIDAE

Anisosticta bitriangularis Say. 1, Mascanin, June 20.

Hippodamia tibialis Say. 1, Natashquan, Aug.. 5.

Hippodamia sp. 1, Greenly Island, July 20.

Coccinella transversoguttata Fald. 2, Bradore Bay, July 18, 26; found dead beneath beach drift.

MELANDRYIDAE

Abstrulia variegata Csy. 1, Natashquan, Aug. 5.

Prothalpia undata Lec. 1, Natashquan, Aug. 9.

Emmesa connectens Newn. 2, Natashquan, Aug. 1, 10.

Serropalpus barbatus Schall. 2, Natashquan, Aug. 1, 10.

SCARABAEIDAE

Aegialia lacustris Lec. 15, Natashquan, June 21, 22.

Aphodius fossor L. Natashquan, Aug. 1-10, abundant.

Aphodius guttatus Esch. 8, Bradore Bay, July 21-26. These and another series of specimens from Battle Harbor, Labr., agree perfectly with examples collected at Amak Island, Alaska. The species was described from Unalaska. It is a member of the *aleutus* group and can be separated by description only with difficulty from allied species occurring in British Columbia and other more southern localities. Its essential characters may be described as follows: length 4.9-5.5 mm.; elytra very dark brown with more or less distinct pale spots; legs reddish-brown, never yellow in part; clypeus very broadly rounded and not at all subangulate on each side of the emargination, near the margin roughened by the punctures and subgranulate; elytra never distinctly alutaceous.

Aphodius tenellus Say. 2, Esquimaux Point, June 13. This name must be used for the North American species at present known as *putridus* Hbst. The latter apparently does not occur on this continent. In *tenellus*, the clypeus is sparsely punctate, the pronotal punctures are sparse at middle and close on the sides, the elytra are more distinctly alutaceous, the anterior tibial spur is straight at apex in the male, and the lateral lobes of the male genitalia are more slender. Six European specimens of the true *putridus* are at hand; they have the clypeus closely punctured, the pronotal punctures equally close throughout, and the anterior tibial spur curved outward at the extreme apex in the males.

Aphodius errans n. sp.

Length 3.8-4.6 mm., width 1.9-2.2 mm. Moderately elongate, robust, and rather strongly convex. Black, the legs and sometimes the elytra and anterior pronotal angles dark reddish-brown; shining, the elytra sometimes rather dull.

Head punctate throughout; the punctures moderately coarse and close, usually fine and sparse at middle; clypeus usually with a very feeble trace of a transverse carina, very feebly emarginate at apex, the angle on each side broadly rounded, the sides straight. Genae moderately prominent, broadly rounded.

Pronotal puncturation consisting of very fine and moderately coarse punctures, these scattered over the entire surface and rather close on the sides; hind pronotal angles obtuse and broadly rounded; base with an entire marginal line.

Elytra subparallel; the striae with moderately coarse and close punctures; intervals feebly convex, with numerous very fine punctules, alutaceous and dull on the apical declivity at least.

Mesosternum alutaceous, the intercoxal process not carinate. Metasternum finely and sparsely punctate, with coarser and closer punctures at the sides but

without coarse punctures on the median area. Abdomen coarsely and closely punctured. Anterior tibiae with their outer margins crenate above the upper tooth. Middle and hind femora finely and sparsely punctate, their tibiae fimbriate at the apices with very short, equal spinules; the first segment of the hind tarsus slightly longer than the three following.

Male. Frontal suture with three very distinct tubercles, the middle tubercle the largest. Well developed individuals with the prothorax larger and with the pronotal puncturation somewhat less close at middle than on the sides, the elytra without trace of alutaceous sculpture except at apex; poorly developed individuals similar to the female in these pronotal and elytral characters. Anterior tibial spur attaining the apex of the second tarsal segment, moderately stout, slightly curved, sharply pointed. Shorter spur of middle tibia about half as long as the longer spur, slender and sharply pointed. Median area of metasternum distinctly depressed.

Female. Tubercles of the frontal suture very feebly developed, the median not larger. Prothorax smaller, the pronotal punctures somewhat closer, as close on the median area as on the sides. Elytra with fine alutaceous sculpture which is usually distinct throughout. Anterior tibial spur slightly more slender and shorter. Spurs of middle tibiae as in the male. Median area of metasternum more or less flattened but never depressed.

Holotype.—♂, Esquimaux Point, Que., June 13, 1929, (W. J. Brown); No. 3138 in the Canadian National Collection, Ottawa.

Allotype.—♀, same data.

Paratypes.—4♀, same data as holotype; 2♀, Miscou Harbour, N. B., (C. H. Young); 1♀, Bilby, Alta., June 1, 1924, (O. Bryant); 1♂, 5♀, Banff, Alta., June 29, 1925 and July, 1929, (O. Bryant, H. and R. Lippincott); 1♀, Canmore, Alta., July, 1929 (H. and R. Lippincott); 1♂, Lake O'Hara, B. C., July, 1929, (H. and R. Lippincott).

This species is closely allied to *pectoralis, tenellus* and *ruricola.* In *ruricola,* the elytra are without trace of alutaceous sculpture and the first segment of the hind tarsus is much shorter. In *tenellus,* the cephalic tubercles of the male are not well developed, the elytra are paler, the punctures of the abdomen are not close, and the median area of the metasternum bears a row of coarse punctures on each side. In *pectoralis,* the elytra are much more strongly alutaceous and the punctures of the median area of the metasternum are moderately coarse and close.

Aphodius vittatus Say. 1, Thunder River, June 10; 19, Esquimaux Point, June 13; 3, Natashquan, June 21 and Aug. 1.

Aphodius leopardus Horn. Natashquan, Aug. 1-10, abundant.

Phyllophaga sp. A single elytron, Natashquan, Aug. 9.

CERAMBYCIDAE

Criocephalus agrestis Kby. 1, Bradore Bay, July 22.

Acmaeops proteus Kby. 1, Trinity Bay, Aug. 18.

Anoplodera nigrella Say. 1, Trinity Bay, Aug. 20.

Anoplodera scxmaculata L. 1, Natashquan, Aug. 10.

Pogonocherus mixtus Hald. 1, Trinity Bay, Aug. 22.

CHRYSOMELIDAE

Donacia hirticollis Kby. 1, Natashquan, Aug. 5; 1, Harrington Harbor, June 30.

Donacia pusilla Say. 13, Natashquan, Aug. 1-8.

Donacia germari Mann. 1, Bradore Bay, July 19.

Donacia emarginata Kby. 2, Natashquan, Aug. 1, 5.

Galerucella nymphaeae L. 1, Thunder River, June 10; 2, Watshishu, June 18; 17, Mascanin, June 20; 1, Harrington Harbor, July 2. The Mascanin examples were taken on sweet gale; the others were taken by sweeping.

Haltica kalmiae Melsh. 7, Trinity Bay, Aug. 20.

CURCULIONIDAE

Apion sp. 1, Mascanin, June 20.

Hylobius confusus Kby. 1, Trinity Bay, Aug. 17; 1, Natashquan, Aug. 10; 2, Bradore Bay, July 22, 26.

Hypomolyx piceus DeG. 1, Trinity Bay, Aug. 20; 1, Little Mecatina Island, July 6.

Dorytomus sp. 1, Betchewun, June 14.

Dorytomus sp. 2, Bradore Bay, July 21.

Notaris aethiops Fab. 5, Natashquan, Aug. 7, 13; 2, Net Island, July 12; 1, Bradore Bay, July 24.

Proctorus decipiens Lec. 1, Seven Islands, June 8.

Anthonomus sp. 1, Thunder River, June 11.

Pseudanthonomus sp. 1 Trinity Bay, Aug. 22.

Elleschus bipunctatus L. 6, Seven Islands, June 8.

Orchestes pallicornis Say. 2, Trinity Bay, Aug. 18, 20.

Orchestes rufipes Lec. 8, Bradore Bay, July 21.

Orchestes pallidior Leng. 1, Trinity Bay, Aug. 22. This is the species recorded by Mr. Blatchley (Jour. N. Y. Ent. Soc. XXXVI, 248) as the European *testaceus* Mull. It is represented in the National Collection by other specimens from Halifax, N. S., Sackville, N. B., Ottawa and western Ontario., Aweme, Man., and Codroy Valley, Nfld. Mr. Frost, on whose material Mr. Blatchley's record was based, has taken the species at Portaupique and Westchester Lake, N. S. and in Maine. Mr. Frost has examined one of our specimens and reports that it is identical with those collected by himself. Mr. Leng has kindly sent me a specimen of the type series of *pallidior,* and it agrees perfectly with our material. It is possible that the species is one of the numerous forms considered varieties of *testaceus* by European authors, but I prefer to use the name *pallidior* until its relationships with these forms is more carefully studied, and I prefer also to consider it a distinct species and not a variety of *pallicornis* Say as described by Mr. Leng. The essential characters of *pallidior* may be described briefly as follows: pale reddish,, the underside of the meso- and metathorax usually and the abdomen sometimes blackish; beak longer and more slender and the eyes more widely separated than in *pallicornis;* pronotal hairs coarse and whitish, similar to the

coarser elytral hairs; scutellum concealed by similar hairs densely placed; the elytra with coarse, whitish hairs covering the apical third, the side margins in the humeral area, and forming a subquadrate sutural spot, this spot situated on the first, second, and part of the third intervals and equidistant from the base and the apical area noted above; the elytra elsewhere with very short, indistinct, brownish-yellow hairs. In *pallicornis,* the body is more convex and is black with the tarsi and antennae paler, the pronotum is more coarsely and less densely punctate, the scutellum is almost naked, and the hairs of the dorsum are fine, brownish-yellow, sparsely and regularly distributed.

SCOLYTIDAE

Determined by Dr. J. M. Swaine and Mr. Karl Schedl.

Dendroctonus piceaperda Hopk. 2, Natashquan, Aug. 1; found dead beneath old bark.

Cryphalus balsameus Hopk. 1, Mascanin, June 19.

Pityophthorus sp. 1 ♀, Seven Islands, June 8.

Orthotomicus caelatus Eich. 6, Natashquan, June 22; working in white spruce.

Dryocoetes americanus Hopk. 4, Trinity Bay, Aug. 17; 1, Natashquan, Aug. 10; 1, Bradore Bay, July 22.

A NEW TACHINID PARASITIC ON A SAWFLY.

BY C. H. CURRAN,

American Museum of Natural History, New York.

The species herein described was reared from the immature stages of a sawfly collected at Mont Laurier, Quebec, by Mr. M. B. Dunn. It is the fifth species belonging to the genus *Spathimeigenia* Townsend.

Spathimeigenia Townsend.

Townsend, 1915, Proc. Biol. Soc. Wash., xxviii, p. 19. Type species, *spinigera* Townsend.
Hylotomomyia Townsend, 1916, Ins. Ins. Menstr., IV, p. 31. Type species, *Admontia hylotomae* Coquillett.

I have examined the type species of both the genera proposed by Townsend and feel sure that they belong to the same genus. As no key to the species has been published I present the following.

TABLE OF SPECIES

1. Legs yellowish ..... *spinigera* Townsend.
   Legs black ..... 2.
2. Small apical scutellars absent ..... *buckelli* Curran.
   Small apical scutellars present ..... 3.
3. Abdomen with discals ..... 4.
   Abdomen without discals ..... *nigriventris* Smith.
4. Parafacials almost half as wide as facial depression ... *hylotomae* Coquillett.
   Parafacials much less than one-third as wide as depression; parafrontals golden pollinose ..... *aurifrons,* n. sp.

Spathimeigenia aurifrons n. sp.

Black, with cinereous pollen. Differs from allied species in having the front golden yellow pollinose. Length, 6 to 7 mm.

Male. Facial depression, cheeks and the occiput grayish pollinose, the posterior orbits, parafacials and parafrontals golden yellow. Front seven-sixteenths as wide as either eye, gently widening anteriorly, with nine or ten pairs of frontals, the lowest three below the base of the antennae, the upper two reclinate: frontal vitta black. Occipital cilia black, extending to the cheeks; occipital pile whitish. Cheeks not quite one-third as wide as height of eye, with longish black hair and a row of bristles below. Parafacials of almost even width, with two irregular rows of very short black hairs on lower half or more. Three or four bristles on the lower half of the facial ridges; vibrissae situated a little above the oral margin. Palpi reddish. Antennae black, reaching to about the lowest fourth of the face; third segment somewhat more than twice as long as the second, moderately narrow, the basal segments cinereous pollinose; arista thickened on basal fourth. Eyes bare. Face moderately retreating below.

Thorax with yellowish tinged pollen on the disc and with four broad, black vittae, the median pair more or less united behind the suture, the outer pair interrupted at the suture. Acrosticals and dorsocentrals, 3-3; posterior sub-lateral present; sternopleurals 2-1; three pairs of marginal scutellars and a much weaker, cruciate apical pair. Propleura bare; infrasquamal setulae absent; prosternum with hair laterally.

Wings strongly infumated anteriorly, paler behind. Third vein with two basal bristles. Squamae pale brown, the upper lobe and base of the lower, yellowish.

Legs black; femora with some grayish pollen. Middle tibiae with a single anterior bristle; posterior tibiae not ciliate. Pulvilli elongate, brownish gray.

Abdomen shining black, the basal third of the second to fourth segments, widening to occupy all but the apical fifth on the venter, grayish pollinose, the pollen obscurely interrupted along the middle line. First and second segments with pair of marginals, the third and fourth with a row; second and third segments with two pairs of discals, the fourth with two irregular rows. Hair appressed. Genitalia brownish.

Female. Front not quite three-fourths as wide as either eye; hair short and sparse; two pairs of orbitals; outer verticals not developed. Parafacials whitish, with three or four irregular rows of very short hairs; posterior orbits mostly whitish. Pollen of mesonotum much thicker, with ochreous tinge, the vittae narrower, the middle pair not united posteriorly. Wings cinereous hyaline. Abdominal pollen occupying the basal two-thirds of the segments, the hairs and bristles arising from black dots. Second and third segments strongly keeled below, the apex of the second, base of the fourth and the whole of the third with short, spines on the edge of the "keel."

Holotype, male. Allotype, female, and one male and six female paratypes, Mont Laurier, Que., parasitic on *Neodiprion* sp., emerged at Ottawa, Ont., December 6, 1929 (M. B. Dunn). Types in Canadian National Collection. Paratypes in American Museum of Natural History.

NOTES ON UTAH HEMIPTERA.[1]

BY H. J. PACK[2] AND G. F. KNOWLTON,
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This paper records the Hemiptera of the superfamily Scutelleroidea (Burmeister) now in the collection of the Utah Agricultural Experiment Station. The writers wish to thank Dr. E. P. Van Duzee for his kindness in determining a series of specimens, by comparison with which the remainder of the collection was named. The purpose of this list is to give additional information as to the occurrence, distribution, abundance, and note damage by the forms of economic importance.

Family SCUTELLERIDAE (Leach)
Shield Buds
Genus *Homaemus* Dallas

1. *Homaemus aeneifrons* (Say)* Logan, 1907.
2. *Homaemus bijugis* Uhler. This species is fairly common in Logan and was collected at Wellsville, July 29, 1905.
3. *Homaemus variegatus* Van Duzee* Cache Junction, August 2, 1909 (Titus).

Genus *Eurygaster* Laporte.

4. *Eurygaster alternatus* (Say). This species is common in many parts of Utah. A few specimens were collected at Lewiston, on August 12, 1929, feeding on wheat (Pack). Other localities in the State where it has been found include Ephraim, Farmington, Logan, Monroe, Salt Lake City, Wellsville, and Westwater.

Genus *Phimodera* Germar.

5. *Phimodera torpida* Walker.* Mt. Logan, November 9, 1914.

Family CYDNIDAE (Billberg).
Negro Buds, Burrower Bugs.
Genus *Thyreocoris* Schrank.

6. *Thyreocoris anthracinus* (Uhler).* Murray, June 22, 1926 (Knowlton), Logan.
7. *Thyreocoris ciliatus* (Uhler). Elsinore, June 24, 1906.
8. *Thyreocoris montanus* Van Duzee. Monroe, July 25, 1906.
9. *Thyreocoris extensus* (Uhler). This species has been collected on several occasions at Logan and Monroe, and specimens from Elsinore, Jensen, Joseph, Layton, and Provo, are in the collection.
10. *Thyreocoris pulicarius* (Germar).* Greenville, July 20, 1907.

Genus *Homaloporus* Uhler.

11. *Homaloporus congruus* Uhler.* Hinckley, September 17, 1914.

Family PENTATOMIDAE (Leach).
Stink Bugs.
Genus *Brochymena* Amyot and Serville.

12. *Brochymena 4-pustulata* (Fabricius). This rough plant bug is rather

1.—Contribution from the Department of Entomology, Utah Agricultural Experiment Station. Publication authorized by Director, January 31, 1930.
2.—Dr. H. J. Pack died on January 5, 1930.
*—A species not recorded in the Van Duzee catalogue of Hemiptera of America North of Mexico, 1917.

common in northern Utah, and quite a number were collected at Bountiful, August 25, 1929, on apple (Pack). Other localities represented include Gunnison, Logan, Moab, Ogden, and Spanish Fork.

Genus *Peribalus* Mulsant and Rey.

13. *Peribalus abbreviatus* (Uhler). Lehi, July 7, 1908 (Titus), Logan, and Salt Lake City.

14. *Peribalus limbolarius* Stal. Several specimens were collected at Lewiston, August 12, 1929, feeding on wheat (Pack). A number of specimens have been collected at Logan, and other localities include Benson, Bountiful, Cache Junction, Newton, Parley's Canyon and Taylorsville.

Genus *Trichopepla* Stal.

15. *Trichopepla grossa* Van Duzee.* Layton, August 11, 1903.

Genus *Rhytidolomia* Stal.

16. *Rhytidolomia faceta* (Say). Several specimens were collected at Spanish Fork, on August 24, 1903.

Genus *Chlorochroa* Stal.

17. *Chlorochroa uhleri* Stal. This species has been collected from wheat at Lewiston, and Wellsville (Pack); willow, at Bountiful (Pack); alfalfa, at Mona (Pack); sugar-beets, at Roy (Knowlton); it has also been collected at American Fork, Benson, Duchesne, Elberta, Grantsville, Hinckley, Lake Point, Nephi, Newton, Park Valley, Roosevelt, Taylorsville, and Thompsons.

18. *Chlorochroa congrua* Uhler. This rather common form has been collected on gooseberry and willow bushes at Bountiful (Pack); on peach at Provo (Pack); and specimens have been taken at American Fork, Brigham City, Hinckley, Logan, Mt. Logan, Mill Creek, Pleasant Grove, and Woods Cross.

19. *Chlorochroa sayi* Stal. During May, 1915, this insect was somewhat destructive to wheat at Washington, and was abundant at Nephi in July, 1905 (Ball). It has also been collected from Bountiful, Brigham City, Cedar Valley, Hinckley, Lake Point, Logan, Newton, Salt Lake City, Snowville, Spanish Fork, Thompsons, and Woods Cross.

Genus *Carpocoris* Kolenati.

20. *Carpocoris remotus* Horvath. This beautifully colored bug has been collected at Cedar Valley, Faust, Howell, Lake Point, Logan, Mills, on alfalfa at Mona (Pack), Nephi, Snowville, Sugarhouse, Thompsons, and Woods Cross.

Genus *Euschistus* Dallas.

21. *Euschistus inflatus* Van Duzee.* This rather common species was frequently observed to be feeding on sugar-beet stems at Ogden during the spring of 1929 (Knowlton); it was collected on willow at Bountiful (Pack), and on peach at Provo (Pack). A number of specimens have been collected at Logan and Brigham City.

22. *Euschistus variolarius* (Palisot-Beauvois). Collections of this rather common form have been made at American Fork, on willow at Bountiful (Pack), Chester, Fort Duchesne, Lehi, on wheat at Lewiston (Pack), Logan, Pleasant Grove, on peach at Provo (Pack) and at Wellington.

*—A species not recorded in the Van Duzee catalogue of Hemiptera of America North of Mexico, 1917.

Genus *Neottiglossa* Kirby.

23. *Neottiglossa cavifrons* Stal. Layton, August 11, 1903, Salt Lake City, June 14, 1904.

Genus *Eysarcoris* Hahn.

24. *Eysarcoris intergressus* Uhler. Feeding on currants at Bountiful and Logan (Pack), and collected at Brigham and Woods Cross.

Genus *Prionosoma* Uhler.

25. *Prionosoma podopioides* Uhler. Logan, July 26, 1906, Wellsville, July 29, 1903.

Genus *Thyanta* Stal.

26. *Thyanta custator* (Fabricus). This common red-shouldered plant bug was extremely abundant at Nephi during the summer of 1905 (Ball). It has been collected from Brigham City, Elberta, Farmington, Gunnison, Hooper, Logan, Logan Canyon, Marysvale, Millan, Mount Pleasant, Peterson, Pleasant Grove, Salina, and on wheat at Wellsville (Pack).

27. *Thyanta rugulosa* (Say). Collected at Cisco, Corinne, Delle, Deseret, Etna, Hinckley, Iosepa, Kelton, Kosmo, Lake Point, Layton, Lucin, Monroe, Monument, Promontory, Skull Valley, Spanish Fork, and Yost.

Genus *Acrosternum* Fieber.

28. *Acrosternum hilaris* (Say). Feeding on apricot at Ogden, May 23, 1929 (Pack). Also collected at Logan, Pleasant Grove, and Salt Lake City.

Genus *Banasa* Stal.

29. *Banasa dimidiata* (Say). Benson, August 23, 1909 (Hoff), Hooper, September 17, 1925, Marysvale, June 25, 1906.

Genus *Dendrocoris* Bergroth.

30. *Dendrocoris pini* Montandon. Richfield, August 17, 1904.

Genus *Perillus* Stal.

31. *Perillus bioculatus* (Fabricius). Logan, July 27, 1904, May 1, 1903, and April 7, 1905.

32. *Perillus bioculatus* var. *clanda* (Say). Logan, Lynndyl, Pleasant Valley, Provo, and Richfield.

33. *Perillus exaptus* (Say). Logan, September 26, 1909.

Genus *Apateticus* Dallas.

34. *Apateticus crocatus* (Uhler). Feeding upon tent caterpillars in Sardine Canyon, July 18, 1929 (Pack), and at Wellsville, July 3, 1925.

Genus *Podisus* Herrich-Schaeffer.

35. *Podisus placidus* Uhler.* Attacking chrysomelid larvae at Bountiful, May 29, 1929 (Pack). Also collected at Tremonton, August 11, 1905.

Genus *Zicrona* Amyot and Serville.

36. *Zicrona caerulea* (Linnaeus). Leamington, July 20, 1918 (G. E. King).

*—A species not recorded in the Van Duzee catalogue of Hemiptera of America North of Mexico, 1917.

NEW COLEOPTERA XIV, WITH NOTES ON KNOWN SPECIES.

BY H. C. FALL,
Tyngsboro, Mass.

Tachycellus tibialis Kby.

If the species bearing this name in the LeConte collection is correctly determined, which I see little reason to doubt, its placement as synonymous with *nigrinus* Dej. by Horn is surely an error. There are in my collection six examples of this species from Massachusetts and Eastern Canada, and I have seen numerous other examples in the Blanchard and Frost collections, all of which differ very definitely from *nigrinus* in several particulars. *Nigrinus* is an appreciably larger species, the elytra are entirely black, the sides of the thorax perceptibly sinuate before the hind angles, which are sharply outlined and almost rectangular, the legs, except the basal parts of the tibiae, black. In *tibialis*, besides the smaller size, the sides of the elytral disk especially at base are obscurely reddish, the sides of the thorax not sinuate before the hind angles, which are a little more obtuse and with narrowly rounded vertices; the legs in large part pale. In the color of the elytra *tibialis* agrees much better with *badiipennis* than with *nigrinus*, but the pale area is as a rule more extended in *badiipennis*, the hind angles of the thorax are more rounded and the basal foveae are punctured.

In Casey's Revision of the Nearctic Harpalinae (Mem. Col. V., 1914) the author rejects from *Tachycellus* all the species hitherto referred to the genus except *nigrinus*, and creates for most of them the new genus *Triliarthrus*, based wholly on a fancied difference in the frontal foveae. From my own observation, the difference mentioned, if it has any real existence, is so trifling, variable and wholly inconsequential as to have no value whatever. If *nigrinus* is accepted as truly belonging to Morawitz' genus Tachycellus, of which there may indeed be some doubt, then the species so referred by Horn must be restored thereto, or to other previously described genera.

Tachycellus (Triliarthrus) protractus Csy.

About a year ago I received from Mr. C. A. Frost Massachusetts examples of his own collecting which he wrote had been identified for him by Casey as *T. protractus* Csy. On comparing them with Casey's description certain discrepancies were noted which led me to doubt the accuracy of the reference. In order to check up on the matter, specimens with notes were sent to Mr. Buchanan for comparison with Casey's type. At the same time certain other species of the genus received critical attention.

Mr. Buchanan's conclusions after a careful study of the types agreed nearly with my predictions and are as follows: Frost's Massachusetts specimens are not *protractus* nor are they like any allied species in the Casey collection; the species is therefore described below.

T. properus Csy. is a little smaller and narrower than *badiipennis* but does not seem to differ otherwise.

T. tetricus Csy. is similarly slightly smaller and narrower than *conformis* but otherwise identical, and as in the preceding the difference can hardly be more than individual in nature.

Tachycellus frosti n. sp.

Elongate oblong-oval, shining black, the elytra minutely alutaceous in the

female, scarcely detectably so in the male; antennae piceous the basal joint pale; lateral bead of thorax and sutural interval of elytra obscurely rufous; tibiae more or less pale except apically, the femora piceous, the four anterior ones sometimes paler. Form throughout nearly as in *badiipennis* but seemingly slightly more elongate; prothorax similarly arcuate on the sides, which converge basally without sinuation before the hind angles which are distinctly rounded; basal foveae with a few fine punctures within the striae and adjacent to them at base. Elytra entirely black without trace of the baso-lateral paler area so characteristic of *badiipennis;* striae perceptibly deeper than in the latter species, especially toward the sides, the intervals in consequence less flat. Body beneath and legs nearly as in *badiipennis.* Length 5.5-5.7 mm.; width 2.2-2.3 mm.

Massachusetts, (Natick, 10-14-28, sifting; C. A. Frost); seven examples; type, ♂.

This species is as indicated most nearly related to *badiipennis,* but may probably be definitely separated in all cases by the characters given above. So far as my series goes it is also perceptibly larger than the latter. I take pleasure in dedicating the species to its discoverer, to whose liberality I am indebted for many valued additions to my cabinet.

Bradycellus (Stenocellus) nebulosus Lec.

This species, the *Acupalpus suturalis* of LeConte (1848) (specific name changed (1853) because of preoccupation), was in 1883 included by Horn in his table of *Tachycellus.* In my article on *Tachycellus* (Jour. N. Y. Ent. Soc. 1905, p. 171) I pointed out that *nebulosus* must be removed from *Tachycellus,* it being in all essentials a *Bradycellus* very similar to if not identical with *B. rupestris.* In the paper before mentioned Casey criticises my disposition of the species on the ground that LeConte's description indicates the presence of a well developed sutural stria, such stria being absent in *B. rupestris* and allies, and my conclusion is dismissed as "probably due to hasty or inaccurate observation," a favorite method of this author of accounting for the opinions of those whose observations or interpretations differ from his own.

As for the scutellar stria in question the facts are these. On the left elytron of the type there is a short oblique impressed line joining the first and second striae, not proceeding from the fovea at the base of the second stria as does the normal scutellar stria, and posterior to the position of such stria when present; on the right elytron there is merely an isolated punctiform impression at the middle of the second interspace. The condition is entirely abnormal and probably accidental, and of no classificatory value. The third antennal joint is pubescent as in *Bradycellus,* not glabrous or subglabrous as in *Tachycellus,* and I desire to reassert that the true position of *nebulosus* is with the Bradycelli of the *Stenocellus* type. Whether the species is the same as *rupestris* is still an open question; I have never given it a further examination with a view to settling this point.

Philonthus microphthalmus Horn.

To the student who is inclined to make a critical study of our species of *Philonthus,* there is no more difficult problem than the elucidation of the complex at present covered by the two names *nigritulus* Grav. and *microphthalmus* Horn.

Fauvel was of the opinion that the numerous variations observed by him in *nigritulus* were intraspecific, and Horn has said of *microphthalmus* that "this species is very variable and it is consequently difficult to fix with certainty its limits." Nevertheless I am inclined to believe that several other distinct species may be masquerading under these two names and at present I wish to call attention to a secondary sexual character overlooked by Horn, by means of which it is possible to split *microphthalmus* into two species easily differentiated when males are at hand.

In examining males of my *microphthalmus* series I noticed in some of them the presence of a compact series of long porrect black bristles on either side of the middle within the apical emargination of the sixth ventral segment. In other males these bristles were entirely lacking. Two species were evidently present, but to decide which was the true *microphthalmus* required comparison with the type. This comparison was made for me by Mr. Liebeck to whom specimens were sent, and *microphthalmus* proved to be the species with the bristles. A third species closely allied to the true *microphthalmus* seems also indicated in my series; brief characterizations of these follow.

Philonthus ovaliceps n. sp.

Form slender, brown or piceous brown, head darkest. Head longer than wide, a little narrower and with the hind angles more gradually rounded than in *microphthalmus*. Prothorax relatively slightly longer than in the latter species and perceptibly narrowed anteriorly. Elytra measured along the suture distinctly shorter than the thorax, the length at the humeri subequal to that of the thorax, punctation sparse and rather coarse. Last ventral segment of the male with a broad subangularly oval emargination about twice as wide as deep and occupying the greater part of the apical width of the segment, the bottom of the emargination with a very narrow membranous border; sides of the emargination destitute of the series of long bristles present in *microphthalmus*. Average length about 4 mm. Other features almost identically as in *microphthalmus*.

This species is represented in my collection by examples from Three Mile Island, Lake Winnipesaukee, N. H. (type ♂); Framingham, Mass. (C. A. Frost), and Alexandria Co. Virginia, collected by myself.

As above indicated *microphthalmus* differs by the rather wider and shorter head, sex for sex, the hind angles being a little more narrowly rounded, giving it a more parallel sided and oblong appearance; the prothorax is also a little wider and not quite so obviously narrowed toward the front. In the male the last ventral is similarly but less widely emarginate, each side of the emargination with an isolated close set series of about eight to ten long porrect black setae. The following localities are represented in my series. New Hampshire, Massachusetts, Michigan, Northern Illinois, British Columbia (Terrace).

Philonthus bernardinensis n. sp.

Closely allied to *microphthalmus*, with which it agrees in most respects including the male characters of the ventral apex; the size however is a little larger and the form notably stouter, the elytra longer than the thorax and more finely punctate. The head and thorax are quite black, the elytra brown, the abdomen piceous. Length 4-4.75 mm.; width 1-1.2 mm.

Southern California, San Bernardino Mts., July-Aug. 1892, three examples, type, ♂.

Chauliognathus omissus n. sp.

Similar in size, form and general aspect to *scutellaris* to which it is closely allied, differing as follows. The prothorax is somewhat more squarely (less parabolically) rounded in front, its surface smooth and shining with scarcely a trace of the fine alutaceous sculpture which dulls the lustre in *scutellaris*. The body beneath is entirely yellow; in *scutellaris* the metasternum is black. The prothorax is typically immaculate but in a second specimen (from New Mexico) there is a small transverse black discal spot at middle. The scutellar black triangular space is here smaller and not quite as long as wide; much longer than wide in *scutellaris*. Front legs bicolored, middle and hind legs black. Length (exclusive of head) 9 mm.

The type is a male from Arizona, collected by D. K. Duncan. The second example, a male from Roswell, New Mexico, was recorded as *scutellaris* in the New Mexico List by Professor Cockerell and myself.

Allonyx cinerescens n. sp.

Elongate oblong, subdepressed, elytra nearly parallel sided in the male, a little widened posteriorly in the female; integuments black, somewhat shining, the general aspect grayish owing to the moderately abundant stoutish appressed cinereous hairs, which do not however conceal the derm; antennae, legs and elytral apex bright rufotestaceous. The tip of the last antennal joint is often infuscate, as is the apical part of the hind femur and more or less of the hind tibia, especially in the male.

Head (♂) relatively a little smaller than in *sculptilis*, in the female nearly the same in the two species; antennae alike in both.

Prothorax moderately transverse, evidently narrowed anteriorly in both sexes, the sides feebly to barely perceptibly sinuate before the angles; hind angles sharply defined but evidently a little obtuse and not prominent; front angles nearly rectangular, a little blunted and not at all anteriorly prominent; surface finely alutaceous and sparsely punctulate, the lateral impressed lines entire.

Elytra (♂) a little wider than the thorax and about seven-tenths longer than wide; sides broadly arcuate and subparallel, lateral reflexed margins rather wide, becoming subexplanate at apex; legs and body beneath as in *sculptilis*.

Length 3.25-3.6 mm.; width 1.3-1.7 mm.

Southern California, Mt. Wilson Apr.-June; Sierra Madre; Pomona (Mts.); Owens Lake (4-22-26, G. R. Pilate). The type is a male taken on Mt. Wilson May 8, 1904.

This species possesses all the characteristic features of *sculptilis* Lec. but differs decisively in the well developed pubescence, this being in *sculptilis* so short and sparse that the insect appears glabrous under casual inspection. In *sculptilis* the prothorax is not narrowed in front and the front angles are sensibly produced; in the present species the thorax is distinctly narrowed in front and the angles are not at all prominent. In both species the fifth ventral of the male is normally pale in color and with an apical sinuation, the sixth or genital segment deeply impressed apically so as to appear bilobed. In the female the fifth segment is not paler and the apex is broadly arcuate. In one male of *sculptilis*

before me the ventral apex is dark. In *cinerescens* the thorax in the female is distinctly smaller and narrower relative to the elytra than in the male; in *sculptilis* this disparity is perceptible but less marked.

Allonyx denudatus Csy.

This species is said to be very sparsely pubescent and the sides of the thorax are not at all sinuate before the angles. A female specimen in my collection from Contra Costa Co., California, may be this. In it the pubescence is a little better developed than in *sculptilis*, the thorax is slightly narrowed in front the sides not sinuate before the angles, the elytral apex scarcely visibly paler.

Allonyx disjunctus Csy.

This is based on a single female example having the lateral impressed lines of the pronotum abbreviated in front. Four of the six specimens of *sculptilis* in my collection have the impressed lines more or less abbreviated, the other two having them entire. As there is almost nothing else in Casey's description on which to base a specific difference, it is highly probable that *disjunctus* is the same as *sculptilis*.

Pseudallonyx Csy.

This genus was erected by Casey for LeConte's *Allonyx plumbeus*, which differs somewhat from the typical species (*sculptilis*) in epipleural structure. *Pseudallonyx* is also said by Casey to differ in this respect from his genus *Vectura* described on a preceding page of the same paper. If this latter difference actually exists it is altogether too feeble to be detected by me, and since *plumbeus* is in every other feature of structure and facies identical with Casey's *Vectura* species it should be referred to that genus and *Pseudallonyx* should be suppressed.

The propriety of this course is further evident from the fact that males of *V. longiceps* Csy. and *plumbeus* Lec. possess in common peculiar and unique secondary sexual characters, these being unknown to Casey, all of whose specimens were females. In a male of *V. longiceps* Csy. (Colorado Desert, California) the protibiae are feebly but perceptibly curved throughout their length, and gradually feebly dilated medially along their inner margin; in addition the first ventral segment bears near its apical margin a very small vertically lamellate and acute dentiform process. In a male *plumbeus* from Colorado I observe precisely the same sexual characters.

I have had in my collection for many years a series of California specimens so closely resembling *plumbeus* that, without minute examination, they had been placed therewith. Not long since I received from Mr. D. K. Duncan several specimens taken by him at Globe, Arziona, which seem to be the same thing. On making a thorough examination I was much surprised to find that all the tarsal claws bore membranous appendages nearly or quite as long as the claws and attached throughout. According to the prevailing classification these ungual modifications are among the fundamental criteria in generic separation. By Casey's table of genera my species runs to *Listromimus*, which it doesn't at all resemble; it is however so completely in accord with *Vectura* in almost every other respect that I am disposed for the present at least to refer it to that genus, creating for it the new subgenus *Vecturoides* in recognition of its one important di-

vergence from typical *Vectura*. The species may be described as follows.

Vectura (Vecturoides n. subgen.) **pseudonycha** n. sp.

Form moderately elongate, subdepressed, gradually widened posteriorly; body black, densely clothed with rather coarse cinereous appressed hairs; labrum, antennae basally and legs entirely bright rufotestaceous.

Head as wide as long, subequal in width to the thoracic apex; palpi, basal joint and outer six or seven joints of antennae blackish; antennae short, not attaining the hind angles of the thorax, joints proportioned as in allied species.

Prothorax slightly wider than long, moderately constricted at apex, sides rounded and feebly prominent at middle, thence convergent and slightly sinuate to apex, parallel and just perceptibly sinuate posteriorly, the hind angles sharply defined and slightly prominent, front angles not prominent and a little blunt, entire margin finely serrulate; base broadly arcuately lobed; lateral excavated line apparently not quite entire, but somewhat obscured by the vestiture.

Elytra three-fourths longer than wide, at base about one-third wider than the thorax, at apical third or two-fifths nearly or quite twice as wide as the latter; apex narrowly subexplanate, not at all paler, sutural angles not prominent.

Body beneath moderately densely albido-pubescent; all the tarsal claws with a rounded membranous appendage which is attached to the claw very nearly or quite throughout the length of the latter. Length 2.4-3.4 mm.; width 1-1.5 mm. (type 3 x 1.4 mm.).

The specimens before me are from Mt. Wilson (type ♀) and Riverside California, collected by the writer; Whitney Creek Sierra Nevada Mts., California, 8,000 ft. (F. S. Daggett); and Globe, Arizona (D. K. Duncan).

I am unable to distinguish the sexes in my series of fifteen examples, unless the more obtuse rounding of the fifth ventral segment in one or two of them indicates the male.

Mecomycter linearis n. sp.

Very elongate, parallel in the male, slightly widened behind in the female; head piceous, thorax and elytra each with a large dorsal piceous cloud, sometimes sharply defined leaving the sides and rear conspicuously pale, sometimes quite diffuse and more extended; body beneath and legs pale rufotestaceous, the metasternum and sometimes the base of the abdomen piceous; integuments above almost glabrous, beneath with very fine sparse inconspicuous pubescence; punctuation of upper surface rather coarse and dense throughout.

Head about as wide as long in the male, longer than wide in the female; eyes moderately large, a little more convex in the male. Antennae nearly or quite reaching the base of the thorax, basal four or five joints pale, outer joints brown or piceous, joints 5-11 of nearly equal width.

Prothorax subcylindrical, base but slightly wider than the apex, the latter equal in width to the head, one-half longer than wide in the female, less elongate in the male, a strong constriction at apical third; side margins very narrow, strongly deflexed at the subapical constriction; disk with a rather broad longitudinal median depression of variable extent.

Elytra a little more than twice as long as wide in the male, barely twice as long as wide in the female, at base about one-half wider than the thorax, the humeri rectangular and widely exposed; dorsal piceous cloud occupying nearly the entire width at base, gradually narrowed behind and attaining the apical fourth; when more diffuse the entire elytra may best be described as piceous or piceotestaceous with dilute margins.

Body beneath very finely and sparsely punctate and shining; prosternum very long before the coxae, notably so in the female where it nearly equals in length the longest diameter of the eye. Fifth ventral of male distinctly emarginate at middle, of the female bisinuate, the median lobe a little prominent.

Length 2.25-3.25 mm.; width .7-1.15 mm.

California: Palm Canyon (near Palm Springs) 4-15-1916, (J. O. Martin), type ♂; Panamint Valley, Apr. 1891, (Koebele).

This remarkable species was many years ago determined as "*Mecomycter* n. sp." by the late Dr. E. A. Schwarz, and I am not aware of its having yet been described. It certainly possesses in the main the distinguishing features, described to this genus, to which it runs in Casey's table. Its very narrow form however gives it an aspect quite unlike either *M. omalinus* or *facetus*.

AN ECOLOGICALLY ANNOTATED LIST OF THE PHALAENIDAE OF MONTANA (LEPID.)*

BY WILLIAM C. COOK,

Bozeman, Montana.

The material upon which this list is based has accumulated since 1900 in the collection of the Montana Experiment Station, and has been collected by workers too numerous to list. However, the basic collection was made by R. A. Cooley at Butte in 1900, and all of the species captured there in two or three nights have not yet been recaptured. A light trap has been run occasionally at Bozeman for many years, and continuously since 1923. In addition to this, as a part of the work on the cutworm project, light and bait traps were run at Havre in 1921 and 1922, and collections have been made at light and flowers near Three Forks since 1924. Light traps have been operated at Hamilton from 1925 to 1929, at Malta 1928 and 1929, and at Miles City in 1929. In all, probably 200,000 specimens have been examined, of which one-half came from Havre in 1921; and were not closely identified. Some results of this work have been published in various places, but no systematic account has been given of the species in Montana, as the other papers have been chiefly ecological in character.

No attempt has been made to include all records in the literature, but records of specimens in the John B. Smith collection at New Brunswick, New Jersey, are included through the kindness of Dr. T. J. Headlee and Mr. Carl Ilg.

Most of the collection has been identified by Dr. J. McDunnough, of the Entomological Branch, Canada Department of Agriculture, and the writer wishes to express to him his hearty thanks for the whole-hearted cooperation which has always been evident. Such material as was not sent to Dr. McDunnough was

*—Contribution from the Entomology Department, Montana Agricultural Experiment Station.

identified by the writer, except for some of the common species which have occasionally been sorted out by student assistants. Dr. McDunnough visited Bozeman in the summer of 1928, and checked the identifications of the entire collection, so that few, if any misidentifications are now present.

Faunal Relations of Montana Phalaenidae

The State of Montana is unequally divided by the Continental Divide. To the east of this Divide lie the Great Plains, while to the west of the Divide is a Pacific slope region. The Phalaenid fauna of the Pacific slope region in Montana is closely related to that of Washington and British Columbia, but contains small groups of species from other regions. The Great Plains in Montana contain a large indigenous fauna, and also many species from more humid regions, which have followed the river valleys and become established in naturally moist places and irrigated areas. The northern part of this region contains many species of general Boreal distribution, which differentiates this district from the southeastern part of the state, whose faunal affinities are southern. Between the Plains and the Pacific slope lies a large Intermountain region, with a mixed fauna, composed of elements from various sources, as well as indigenous species. The Intermountain region contains many species from Idaho and Utah which have invaded the southwestern part of Montana. These faunal areas and the points of collection are shown in Plate 20.

Life Histories of Montana Phalaenids

Several general types of life history may be distinguished among the Phalaenids of cutworm habits. As we have done very little work with the other groups, they will merely be mentioned as occasion arises. The great majority of our cutworms hibernate in the egg stage. The larva is present in May and early June, and the adults appear either in July or late August, depending upon the presence or absence of some type of aestivation. Aestivation is achieved either through a prolonged dormant *prepupal* stage, lasting from one to six weeks, or through aestivation of the adults. Another fairly large group hibernates in the larval stage, with the moth flying in June and July. A few species have two broods per year, flying in June and September. Some species hibernate as adults, and fly in fall and spring, while some others hibernate as pupae. There are two definite flights of cutworm moths. The first is in late June and early July, and the second is in late August and early September. A few rather important species fly between the two main flights, and occasionally fly in such numbers as to outnumber the members of the main flights, but this is rare.

Arrangement of The List.

The arrangement and nomenclature of this list will follow that of the *Check List* of Barnes and McDunnough (1) except in the subfamily Agrotinae, where the more recent arrangement of McDunnough's *Revision of the Agrotinae* (2) is used. In all cases the species are numbered according to the *Check List*. Geographic distribution will be indicated by the zones outlined above whenever the number of records is sufficient to warrant generalization; in other cases, the

(1) Barnes, Wm. and McDunnough, J. H. Check List of the lepidoptera of Boreal America. Decatur, Ill, 1917.

(2) McDunnough, J. H. A generic Revision of North American Agrotid Moths. Nat. Mus. Can. Bull. 55, 1929.

Northern Plains
GREAT PLAINS REGION
Southern Plains
Miles City
Havre
Malta
Glasgow
Billings
Bozeman
Livingston
Yellowstone National Park
INTERMONTAIN REGION
PACIFIC NORTHWEST REGION
SCALE IN MILES
LEGEND
CONTINENTAL DIVIDE
NATIONAL FOREST RESERVES
INDIAN RESERVATIONS
COUNTY LINES
COUNTY SEATS
CAPITAL
BOZEMAN (Name Institution)

locality of capture is indicated. The season of moth flight is indicated by months whenever possible.

The relative abundance of the various species is indicated according to an arbitrary scale, upon which a species of which the average seasonal catch per trap is more than 100 specimens is designated as *abundant,* one of which between 10 and 100 specimens are captured is called *common,* and one of which 1 to 10 specimens are captured is called *rare.* Qualifying adjectives modify this scale and indicate abundance somewhat more closely. When only a few records are available, over a period of years, the number of specimens captured is given.

PHALAENIDAE

HELIOTHINAE

Melicleptria Hbn.

1068 *M. subatra* Sm. Intermountain and Pacific slope regions. June and July. Rare.

1073 *M. sueta* Grt. Three specimens, Bozeman, June 1904.

Dysocnemis Grt.

1080 *D. oregona* Hy Edw. Intermountain, in canyons. One specimen from Malta, in northern plains region. May to July. Rare.

Heliothis Ochs.

1087 *H. paradoxa* Grt. One specimen at Three Forks, July 10, 1929. This specimen was found on a fence post, stridulating. It was located by the noise which it made, which was very similar to the rattle of a rattlesnake in character, but weaker. We observed it for a minute or so before capturing it. The moth, which was a male, held its wings in a half open position, and seemed to vibrate the costa of the fore wing against the post to produce the sound. It would "rattle" for several seconds at a time, then rest a few seconds and repeat the procedure. It seemed entirely oblivious to the light of our acetylene searchlight, and only ceased rattling when caged.

1088 *H. ononis* Schiff. Two specimens from Malta, July 14, 1928.

1089 *H. phloxiphaga* G. & R. State wide in distribution, more common in the Intermountain region. June to August. Crumb (Proc. U. S. nat. mus. vol. 68 art. 16) gives alfalfa, phlox, grasses and *Grindilia squarrosa* as larval food plants. I have suspected this species of being our Montana "corn earworm," as *obsoleta* is very rare, but have been unable to rear any adults from larvae on corn. Further observations are necessary to prove this point.

1090 *H. obsoleta* Fab. One specimen, Bozeman, Aug. 29, 1929. This is the true corn earworm. I have seen no other Montana specimens, although several reports of earworm damage are present in the files, and larvae have been sent in.

Dasypoudaea Sm.

1096 *D. meadi* Grt. Common in the Plains area, especially in the north. Moths fly from June to August.

Rhodophora Guen.

1097 *R. gaurae* A. & S. Intermountain region. June and July. Rather rare.

1098 *R. florida* Guen. Two specimens from Malta, June 28 and July 2, 1929.

Lygranthoecia G. & R.

1127 *L. thoreaui* G. & R. Eight specimens from Malta in July.

Schinia Hbn.

1143 *S. cumatilis* Grt. Great Plains, Intermountain region. Common in northern part of Montana. July-August.

1160 *S. separata* Grt. One specimen, Bozeman, Aug. 20, 1929.

1161 *S. acutilinea* Grt. Northern Plains, and Intermountain regions. August. Common.

1174 *S. albifascia* Sm. Fairly common at Three Forks in August.

1178 *S. walsinghami* Hy Edw. One specimen, Bozeman, Aug. 20, 1919; one specimen Three Forks Aug. 28, 1927.

1191 *S. jaguarina* Guen.. Northern Plains and Intermountain regions. July-August. Rare.

1192 *S. arcigera* Guen. Two specimens, Malta, July 19, 1929.

Canthylidia Butl.

1210 *C. scutosa* Schiff. Pacific slope. Common. Scattered specimens from Three Forks, Malta and Miles City. July-August.

Copablepharon Harv.

1213 *C. grandis* Stkr. One specimen, Malta July 26, 1928.

1215 *C. longipennis* Grt. One specimen, Havre, 1922.

AGROTINAE

Euxoa Hbn.

1240 *E. olivia* Morr. Great Plains. September. Very common. This species is quite variable and doubtless all the named forms occur in the State.

1241 *E. brevipennis* Sm. Intermountain and Pacific slope regions. September. Common. Single specimens have been secured from various points in the Great Plains area. The larvae has been reared from tumbling mustard, Russian thistle, hare's-ear mustard and sweet clover. The larva is a typical Euxoa but is easily distinguished by the brown markings, as it is the only species we have reared with definite brown markings. Larvae are found in May and undergo a long dormant prepupal stage.

1242 *E. cicatricosa* G. & R. Abundant in Intermountain region. August and September.

1243 *E. cinereopallida* Sm. Abundant in Intermountain region August-September. This species and the preceding are both variable and in many cases are hard to separate without making genitalic slides.

1245 *E. dargo* Stkr. Common in the northern Plains region. August-September. One larva was reared from corn from Dawson county in 1921. Another larva was picked up on Russian thistle at Havre in 1922. This had a rather prolonged larval period but fairly short prepupal period.

1247 *E. quadridentata* G. & R. Pacific slope, Intermountain and northern Plains regions. August-September. Abundant. Several specimens were reared from spring wheat from Plevna in 1919.

1249 *E. laetificans* Sm. Statewide in distribution, abundant everywhere. The male type of *masculinus* Sm. was taken at Butte in 1900. Larvae have been reared from alfalfa, sweet clover, sugar beets (with *E. ochrogaster*) head lettuce (in a mixed infestation) and Russian thistle. There is a prolonged prepupal period. This species has apparently increased greatly in recent years, as no specimens were captured at Havre in 1921 or 1922, and only a few were taken at

Three Forks in 1920.

1250 *E. plagigera* Morr. Common all over the State except in the southern Plains area. June-September. I have suspected this species of aestivating in the adult stage, but have no definite proof, as the larva has never been reared.

1250, 1 *E. mcdunnoughi* Cook. Fairly common in northern Plains and Intermountain regions. July-August. The moth is most frequently taken at flowers of sunflowers (*Helianthus annuus*) and prairie thistle (*Carduus undulatus*).

1251 *E. oblongstigma* Sm. Common in Intermountain and northern Plains regions. July-September.

1252 *E. ridingsiana* Grt. Intermountain and Pacific slope regions. July-August. Common. Larvae have been reared from garden crops, cultivated phlox and barley. The specimens from phlox were associated with *E. messoria, E. tessellata, E. sponsa* and a species of the *quinquelinea* group. Those on barley were associated with *E. ochrogaster*. This species apparently winters in the egg stage and has a very short prepupal period.

1377 *E.* (*Chorizagrotis*) *perolivalis* Sm. Common in Intermountain region, rare elsewhere. July-August.

1377a *E. perolivalis manitobana* McD. Two specimens from Three Forks, Aug. 26, 1925 and July 17, 1927.

1388 *E.* (*Rhizagrotis*) *flavicollis* Sm. Common everywhere except in southern Plains region. July-August. One specimen, reared from sweet clover in 1928, had a life history similar to that of *ridingsiana*.

(1244 *E. ducalis* Sm.) This species is probably found in the State and would run very close to the following species.

1252, 1 *E. cooki* McD. Described from specimens taken at Three Forks, where it is fairly common. One specimen from Bozeman and one from Malta. August. Moths feed on flowers of rabbit brush.

1254 *E. andera* Sm. One specimen from Malta, Sept. 5, 1928.

1255 *E. atristrigata* Sm. Fairly common near Three Forks. Rare elsewhere. August-September. It is possible that this might prove quite common at flowers in other parts of the state were such collections made.

1256 *E. nevada* Sm. Distribution similar to that of the preceding species but not so common anywhere. Both are apparently most abundantly collected on rabbit brush.

1258 *E. citricolor* Grt. Four specimens from Three Forks, Sept. 1927; Aug. 28, 1929. One specimen from Bozeman, Sept. 12, 1929. All of these specimens are of a grayish form somewhat closely resembling *pallipennis* and not the bright yellow form found in Idaho and Utah.

1259 *E. catenula* Grt. Common everywhere except southern Plains region, August-September. This species is not greatly attracted to light, so that its abundance is not well indicated by light trap records. Larvae have been reared from wheat (with *A. orthogonia*), sweet clover, *Astragalus sp., Lupinus sp.*, Russian thistle, hare's-ear mustard and prairie violet. This species apparently winters in the egg stage and has a prolonged prepupal period.

1260 *E. pallipennis* Sm. Abundant in Intermountain and northern Plains regions. August-September. In 1921 and 1922 this was the most abundant cutworm in these regions, far outnumbering the pale western cutworm. Since that time it

has become rather rare. It feeds chiefly on Russian thistle and it is variable in abundance following closely the variations of its food plant. It is often found in stubble fields and has been reported once or twice as injuring wheat. The life history is very similar to that of *catenula*.

1261 *E. satiens* Sm. Abundant in Intermountain region. August-September. Larva is unknown.

1262 *E. misturata* Sm. Abundant in Three Forks area. Rare elsewhere. August-September. This species is very variable. *Candida* Sm. was described from Boulder, Montana, which is close to the Three Forks area. There are three quite well-marked forms of this species present but it is impossible to connect them with published names until the types are studied.

1263 *E. vertesta* Sm. One specimen from Miles City, Sept. 11, 1929, doubtfully referred to this species by McDunnough.

1264 *E. mitis* Sm. Similar in distribution to *misturata*. August-September. I do not doubt that all of the named forms of this species are present, as the species is exceedingly variable, but I have made no attempt to connect names with the forms.

1265 *E. moerens* Grt. Fairly common at Three Forks. August-September. This form was described from Arizona and one specimen was captured at Malta in 1928. A single larva was found on sweet clover in May 1929, which had a very long prepupal period and emerged Aug. 13. Moths are collected chiefly at rabbit brush.

1268 *E. cona* Stkr. A single specimen at Malta, Sept. 17, 1928. Doubtfully referred to this species by McDunnough.

1269, 1 *E. dodi* McD. Four specimens. One each from Bozeman, Aug. 26, 1927; Three Forks, Aug. 28, 1927; Hamilton Sept. 12, 1928 and Malta Sept. 17, 1928. The last two specimens were somewhat doubtful.

1273 *E. intrita* Morr. Very abundant and variable at Bozeman where all of the forms *strigilis, reuda* and *alticola* are found. All of the forms except *reuda* are common also at Hamilton. August-September. Larvae have been reared from dandelions and from cabbage on sod land. This species apparently hibernates in the egg stage and there is no prolonged prepupal period.

1421 *E.* (*Agrotis*) *aurulenta* Grt. Two specimens, Miles City July 29, 1929 and Malta July 3, 1929.

1275 *E. infracta* Morr. Fairly common in Intermountain and Pacific slope regions. August-September.

1279 *E. sponsa* Sm. Common except in northern Plains region. July-August. Larvae have been reared from cabbage (with *intrita*) alfalfa, phlox (with *ridingsiana* and others), sweet clover and dandelion. Several specimens were collected from an unidentified plant at 7000 feet in a canyon near Bozeman. This species apparently winters as an egg, as very small larvae have been found in April and May. It has a fairly long prepupal period, and the peak of emergence is near August 1.

1282b *E. perfusca cocklei* Sm. Four specimens from Hamilton and Bozeman. July-August.

1283 *E. excogita* Sm. Four specimens from Bozeman and Hamilton. One was

doubtfully determined as this species by McDunnough while the others were more definitely named. Dates range from July 18 to Aug. 8.

1288 *E. exculta* Sm. One specimen from Hamilton Aug. 25, 1928.

1288a *E. exculta criddlei* Sm. Two specimens from Hamilton July 25, 1928, doubtfully referred to this species by McDunnough.

1289 *E. stigmatalis* Sm. Four specimens from Hamilton Aug. 16 to Sept. 9, 1927. A specimen taken at Bozeman in July 1928 was doubtfully referred to this species.

1486 *E.* (*Lycophotia*) *scandens* Riley. Common in the eastern part of the Great Plains area. June-July. This is an eastern species which has apparently worked its way up the river valleys and has become established in irrigated land.

1292 *E. acornis* Sm. We have several specimens from Bozeman in August and September, one from Three Forks, Sept. 2, 1925 and four from Malta, Sept. 4, 1928.

1293 *E. taura* Sm. One specimen of this species, collected at Butte, Aug. 28, 1900 by R. A. Cooley is now in the Smith collection.

1294 *E. alko* Stkr. Intermountain and Pacific slope regions. July-August. Rare. One specimen from Malta, July 1928.

1295 *E. choris* Harv. Common at Three Forks and also collected in the Pacific slope and Plains regions. July-August. This is another species that does not come freely to light traps, so it is probably more common than our records indicate.

1296 *E. nostra* Sm. Common at Three Forks in July. Two specimens from Malta, July 14 and 19, 1929. Larvae have been collected on hare's-ear mustard and prairie violet in May. There is no prolonged prepupal period.

1297 *E. pluralis* Grt. Two specimens, Three Forks, July 7, 1925 and July 17, 1929. One specimen, Hamilton, July 7, 1929.

1301b *E. medialis poncha* Sm. One specimen from Havre, Sept. 1922 and one specimen from Malta, Sept. 12, 1928.

1303 *E. mimallonis* Grt. Seven specimens from Three Forks and Hamilton, August and September.

1303a *E. mimallonis gagates* Grt. Three specimens, Butte Aug. 28, 1900, collected by R. A. Cooley. One specimen, Three Forks, Sept. 2, 1927.

1304 *E. messoria* Harr. Statewide in distribution. Common everywhere. August-September. Larvae have been reared from sweet clover, alfalfa, phlox (with *ridingsiana*), lupines and tumbling mustard. The larva works very late in the spring and has been recovered as late as June 20th. There is a very short prepupal period.

1304a *E. messoria territorialis* Sm. This is probably the most common form of *messoria* in this state but it has not been separated in our records.

1306 *E. difformis* Sm. One specimen, collected at Butte by R. A. Cooley, Aug. 29, 1900, is now in the Smith collection.

1308 *E. terrena* Sm. We have specimens from Hamilton in June and July, and three specimens collected in the West Gallatin Canyon near Bozeman, July 12, 1927.

(To be continued)

MAILED SATURDAY, NOVEMBER 29TH, 1930.